IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEBRASKA

DALE E. BETTISWORTH, Personal Representative of the Estate of Cathy Jo Bettisworth, deceased, Plaintiff, vs. BNSF RAILWAY COMPANY, f/k/a Burlington Northern and Santa Fe Railway Company, Defendant.	8:17-CV-491 MEMORANDUM AND ORDER

The plaintiff, Dale Bettisworth, alleges a claim pursuant to the Federal Employers' Liability Act (FELA) regarding an injury sustained by his deceased wife, Cathy Jo Bettisworth, in the course and scope of her employment with the defendant, the BNSF Railway Company. Filing 1 at 1-2. The defendant moves this Court for an order in limine excluding the testimony of the plaintiff's two experts: Hernando R. Perez, Ph.D., M.P.H. (filing 83), and Ernest P. Chiodo, M.D., J.D., M.S., M.B.A. (filing 86). The defendant asserts that the opinions disclosed by both experts: (1) lack a scientifically valid basis, (2) are not based on sufficient facts and data, (3) were reached absent scientifically reliable methods and principles, and (4) lack reliable scientific reasoning, methodology, and foundation as required by Fed. R. Evid. 702 and *Daubert v. Merrell Dow Pharm., Inc.,* 509 U.S. 579 (1993). Further, the defendant moves for summary judgment, arguing that because the testimony of the plaintiff's experts must be excluded, the plaintiff will be unable to prove an essential element of his claim. Filing 91. For the reasons that follow, the Court will deny the defendant's motions.

I. STANDARD OF REVIEW

Summary judgment is proper if the movant shows that there is no genuine dispute as to any material fact and that the movant is entitled to judgment as a matter of law. *See* Fed. R. Civ. P. 56(a). On a motion for summary judgment, facts must be viewed in the light most favorable to the nonmoving party only if there is a genuine dispute as to those facts. *Torgerson v. City of Rochester*, 643 F.3d 1031, 1042 (8th Cir. 2011) (en banc). Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the evidence are jury functions, not those of a judge. *Id.*

II. BACKGROUND

Cathy Jo Bettisworth was employed by the defendant from 1979 to 2012, and worked at the defendant's railyard in Alliance, Nebraska. Filing 1 at 2. After starting off as a laborer on the diesel pit, in 1980, Cathy began working as a hostler, a position she held for the duration of her employment. As a hostler, her primary responsibility was moving locomotives from one location to another within the Alliance railyard. Filing 97-3 at 3-4. Cathy retired from the railroad in April 2012. Filing 97-3 at 2. She was diagnosed with adenocarcinoma of the lung in October 2014, and passed away December 31, 2014. Filing 97-3 at 2-3; filing 106-5 at 3. The plaintiff alleges that Cathy was exposed to a wide range of toxic and carcinogenic substances during the course of her employment with the defendant. However, the motions currently before the Court only concern Cathy's exposure to diesel exhaust, diesel fuel, and benzene. The plaintiff alleges that the cumulative effect of Cathy's exposures to diesel exhaust, diesel fuel, and benzene resulted in the development of her lung cancer, and that her exposures were the result of the defendant's negligence. Filing 1 at 1-3.

Dr. Hernando Perez was retained by the plaintiff to provide expert testimony regarding the safety of the defendant's work environment, the defendant's negligence, and Cathy's exposure to diesel exhaust, diesel fuel, and benzene. Filing 96 at 9. The plaintiff's Fed. R. Civ. P. 26(a)(2) disclosures state that Dr. Perez is expected to testify generally as to notice and foreseeability of the hazards associated with Cathy's employment, including her exposure to carcinogens, and the knowledge within the railroad industry of the hazards associated with exposure to toxins. Filing 85-1 at 1.

Dr. Perez received a Masters in Public Health from Emory University in 1998, and earned his Ph.D. from Purdue University in 2004. Dr. Perez has certifications as an Industrial Hygienist from the American Board of Industrial Hygiene, and as a Safety Professional by the Board of Certified Safety Professionals. Filing 97-1 at 1. Dr. Perez is currently the lead industrial hygienist and environmental hygiene program manager for the United States Citizenship and Immigration Services (USCIS), United States Department of Homeland Security. Prior to his employment with the USCIS, Dr. Perez was an Associate Professor of Public Health, Department of Environmental and Occupational Health at Drexel University School of Public Health. Dr. Perez has authored several peer-reviewed publications regarding environmental health and industrial hygiene.

Dr. Ernest P. Chiodo was retained by the plaintiff to provide expert testimony regarding the cause of Cathy's lung cancer. The plaintiff's Rule 26(a)(2) disclosures state that Dr. Chiodo will testify about the nature and extent of Cathy's injury, as well as the general and specific causation of her injury. Filing 88-1 at 1. Dr. Chiodo earned his Doctor of Medicine from Wayne State University School of Medicine in 1983, and a Juris Doctorate from Wayne State University School of Law in 1986. He has a Masters of Public Health

from Harvard, a Masters of Science in Biomedical Engineering and a Masters of Science in Occupational and Environmental Health Sciences from Wayne State, a Masters of Science in Threat Response Management from the University of Chicago, and a Masters of Science in Evidence-Based Health Care from Oxford. Filing 100-1 at 1-2.

Dr. Chiodo is licensed to practice medicine in Michigan, Illinois, Florida, and New York. He is licensed to practice law in Michigan and Illinois. Dr. Chiodo has board certifications from the American Board of Internal Medicine, the American Board of Preventive Medicine in Occupational Medicine, the American Board of Preventive Medicine in Public Health and General Preventive Medicine, and the American Board of Industrial Hygiene as a Certified Industrial Hygienist. Previously, he served as the Medical Director and Manager of Medical and Public Health Services for the City of Detroit, and has also served as an assistant professor of internal medicine and an adjunct professor of law. Filing 100-1 at 4-5.

III. DISCUSSION

Employers subject to FELA are required to provide and maintain a reasonably safe place for their employees to work. *Cowden v. BNSF Ry. Co.*, 690 F.3d 884, 889 (8th Cir. 2012). Although FELA is to be liberally construed to further Congress' remedial goal, it does not make the employer the insurer of the safety of its employees while they are on duty. *Consol. Rail Corp. v. Gottshall*, 512 U.S. 532, 543 (1994). FELA is premised on common law concepts of negligence and injury. *Urie v. Thompson,* 337 U.S. 163, 181 (1949). The railroad's duty to provide a safe workplace is a duty of reasonable care—that which is reasonably foreseeable under like circumstances. *CSX Transp. Inc. v. McBride*, 564 U.S. 685, 703 (2011). If an employer's negligence is established, a relaxed standard for causation is applied. *Id.* The causation test is whether

the employer's negligence played any part, no matter how slight, in causing the injury for which damages are sought. *Id.*; *Paul v. Mo. Pac. R.R. Co.,* 963 F.2d 1058, 1061 (8th Cir. 1992).

Unless the causal connection between an injury and the alleged hazard is obvious to a layman, expert evidence is required to establish the causal link. *Brooks v. Union Pac. R.R. Co.,* 620 F.3d 896, 899 (8th Cir. 2010). The cause of Cathy's adenocarcinoma of the lung is not obvious to a layman, and, to be established, requires expert testimony—even with the relaxed causation standard required by FELA. *Id*. Rule 702 speaks to the admissibility of expert testimony.

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge, will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

A trial court is charged with a gatekeeping responsibility to ensure that all Rule 702 expert testimony and evidence to be admitted is both relevant and reliable. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999); *United States v. Merrell,* 842 F.3d 577, 582 (8th Cir. 2016). In screening expert testimony, the trial court must assess whether evidence based on scientific, technical, or other specialized knowledge is useful for the jury, whether the witness is

qualified, and whether the evidence is trustworthy or reliable in an evidentiary sense. *Lauzon v. Senco Prod., Inc.,* 270 F.3d 681, 686 (8th Cir. 2001). Relevance concerns whether the expert's reasoning or methodology is applied properly to the facts at issue. *Marmo v. Tyson Fresh Meats, Inc.,* 457 F.3d 748, 757 (8th Cir. 2006). Testimony is relevant if it is "sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute." *Daubert*, 509 U.S. at 591.

The trustworthiness or reliability of an expert's testimony is measured by evaluating whether the methodology underlying the expert's conclusions is scientifically valid. *Id.* at 589-90; *Barret v. Rhodia, Inc.,* 606 F.3d 975, 980 (8th Cir. 2010). Factors to consider when assessing reliability include; (1) whether the expert's theories have been tested, (2) whether the expert's theories have been subject to peer review or publication, (3) whether there is a known or potential error rate, (4) whether there are controlling standards, (5) whether the theory or technique is generally accepted in the relevant scientific community, (6) whether the expertise was developed for litigation or naturally flowed from research, and (7) whether the expert ruled out other alternative explanations. *Russell v. Whirlpool Corp.,* 702 F.3d 450, 456 (8th Cir. 2012); *Polski v. Quigley Corp.,* 538 F.3d 836, 839 (8th Cir. 2008). The reliability inquiry is intended to be fact specific and flexible, with the trial court using, adapting, or rejecting factors as the particular case demands. *Russell*, 702 F.3d at 450.

The trial court should focus its reliability inquiry on principles and methodology, not on the conclusions that are generated. *Kuhn v. Wyeth, Inc.,* 686 F.3d 618, 625 (8th Cir. 2012). The Eighth Circuit Court of Appeals has drawn a distinction between challenges to scientific methodology, and challenges to the application of that scientific methodology. *United States v.*

Gipson, 383 F.3d 689, 696 (8th Cir. 2004). In general, deficiencies in the application of scientific methodology go to the weight of the expert's testimony, not to its admissibility. *Id.* It is up to the opposing party to challenge the factual basis for an expert's opinion in cross-examination. *Bonner v. ISP Techs., Inc.*, 259 F.3d 924, 929 (8th Cir. 2001).

"Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert,* 509 U.S. at 596. "As long as the expert's scientific testimony rests upon 'good grounds, based on what is known' it should be tested by the adversary process with competing expert testimony and cross-examination, rather than excluded by the court at the outset." *Johnson v. Mead Johnson & Co., LLC,* 754 F.3d 557, 562 (8th Cir. 2014) (quoting *Daubert,* 509 U.S. at 590).

Standards regarding proof of causation under FELA and the standards for admission of expert testimony under Fed. R. Evid. 702 are distinct issues and do not affect one another. *Claar v. Burlington Northern R. Co.,* 29 F.3d 499, 503 (9th Cir. 1994).

1. DR. PEREZ' OPINIONS

The defendant argues that Dr. Perez' opinions regarding foreseeability and notice are not admissible because "his dose estimate was not reached as a product of techniques subject to objective, independent validation in the scientific community." Filing 84 at 6. Fatally absent from Dr. Perez' analysis, the defendant argues, is his lack of knowledge regarding Cathy's specific workplace or work duties, his failure to interview "anyone who observed Decedent or did the same work as her for the majority of her career," and his rejection of the defendant's own industrial hygiene exposure studies. Filing 84 at 6-7.

The Court finds the defendant's arguments to be without support in the record, and in one respect, perhaps simply inaccurate. First, it should be noted that the defendant does not dispute Dr. Perez' qualifications to testify as an expert in the fields of industrial hygiene and occupational health. Nor could it reasonably do so. The facts and data that Dr. Perez relied on for his opinions came from the plaintiff's deposition, and Dr. Perez' interview of the plaintiff, as well as from articles in several peer-reviewed publications, standard textbooks, and governmental publications. Dr. Perez reported reviewing information found on several websites, including websites for the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the Environmental Protection Agency, the Agency for Toxic Substances and Disease Registry, the National Cancer Institute, the National Institute of Environmental Health Sciences, and the International Agency for Research on Cancer. Filing 97-3 at 1. Dr. Perez also reviewed BNSF records, which included Cathy's employee records, and several BNSF industrial hygiene reports and documents. Filing 97-3 at 12; filing 97-2 at 18.

Contrary to the defendant's representation, Dr. Perez obtained a first-hand account of Cathy's exposure to diesel exhaust from the plaintiff. Both Cathy and the plaintiff were hostlers in the Alliance railyard between 2002 and the plaintiff's retirement in 2010. Filing 97-3 at 3. According to the plaintiff, a hostler's primary job responsibility was moving locomotives from one location to another within the Alliance railyard. Hostlers were regularly required to operate locomotives in the direct path of diesel exhaust emissions from other locomotives in the railyard. It was also common for a hostler to operate a locomotive in reverse (long hood first), which meant the hostler would be driving into the locomotive's exhaust, thus entraining greater quantities of

exhaust into the enclosed locomotive cab workspace. The locomotives that the hostlers used were usually older, and did not have air conditioning. As such, the windows of the cabs were usually open. Filing 97-2 at 16. The plaintiff told Dr. Perez that it smelled like diesel fuel whenever he was outside in the railyard, and hostlers were constantly around diesel fuel or diesel exhaust. The plaintiff estimated that on average, a hostler would spend five hours out of an eight-hour day in an idling locomotive, or transiting a locomotive to a different location. Filing 97-3 at 3.

In his report, Dr. Perez opined that Cathy was chronically exposed to a varying magnitude of diesel exhaust over the course of her employment. Filing 97-3 at 3. Occupational exposure to diesel exhaust occurs along a continuum, and is dependent on factors such as source proximity and intensity, the use of personal protective equipment, and the degree to which the work environment is enclosed. Lacking objective and specific exposure dates, Dr. Perez identified several approaches that are used to estimate historical occupational exposure. Filing 97-3 at 8. The approach he selected was the industrial hygienist expert assessment, which, according to the literature, could provide accurate subjective estimates of mean exposures. Dr. Perez identified relevant determinates with respect to Cathy's work environment, and, in his professional judgment, weighed the affect each determinate would have on exposure.

The determinates Dr. Perez considered were that Cathy spent a significant amount of time in a locomotive cab with open windows in the presence of other locomotives where entrainment of diesel exhaust would result from multiple sources. He also considered the relatively enclosed nature of a locomotive cab, and the workplace descriptions provided by the plaintiff. Dr. Perez then considered peer-reviewed literature in terms of diesel exhaust

concentrations for certain settings, as well as the defendant's reported data regarding average levels and ranges of diesel exhaust concentration. Filing 97-2 at 14.

The defendant criticizes Dr. Perez' analysis regarding Cathy's exposure for not including the testing done at the Alliance railyard. Filing 84 at 7. However, Dr. Perez did consider the defendant's testing results, and found them to not be representative of Cathy's exposure, inconsistent with the reported concentrations in peer-reviewed literature, and well below what the defendant reports in its HAZCOM training as representative diesel exhaust levels that can be found in a railroad environment. Filing 97-2 at 18-19.

Exposure to diesel exhaust is measured by assessing element carbon. Filing 97-2 at 10. The peer-reviewed literature cited by Dr. Perez describes three estimated elemental carbon exposure range categories of diesel exposed workers—high (27-658 μg/m3), intermediate (<50 μg/m3), and low (<25 μg/m3). Filing 97-3 at 6. The highest exposure levels were found in enclosed underground worksites such as mines. The intermediate exposure levels were generally reported for above-ground, semi-enclosed environments. The lowest levels were associated with enclosed areas that were separated from the diesel source; for example, drivers, train crews, surface miners, and parking attendants. Filing 97-2 at 14-15.

Dr. Perez estimated that Cathy's average exposure to diesel exhaust while working as a hostler for the defendant was "consistent with the upper quartile of the low range, with frequent excursions into the intermediate range." Filing 97-3 at 6. When asked to further specify, he opined that he was confident that Cathy's average exposure level would fall somewhere between 18 and 25 μg/m3, but he would expect her exposure concentrations to be above 25 μg/m3 while she was in a locomotive cab. Filing 97-2 at 15. Dr. Perez

reported that the excess risk of lung cancer due to lifetime occupational exposures to elemental carbon of 25 μg/m3 is estimated at 689 per 10,000 workers. The excess risk for lifetime occupational exposures of 10 μg/m3 is estimated at 200 per 10,000 workers. Both exposure risks exceed the OSHA goal of limiting excess risks of cancer associated with lifetime exposure to carcinogens to 1 per 1,000 workers, and the NIOSH risk management limit for carcinogens of 1 excess cancer death per 10,000 workers. Filing 97-3 at 7.

Finally, Dr. Perez reported that there is documented scientific research assessing the carcinogenic nature of diesel exhaust dating back to 1954, and that since that time, the association between diesel exhaust exposure and cancer has been well established. Filing 97-3 at 7. He reported that the EPA concludes that "human evidence from occupational studies is considered strongly supportive of a finding that diesel exhaust exposure is causally associated with lung cancer." *Id.*

The defendant has done nothing to point the Court to any deficiencies in Dr. Perez' methodology or the principles he relied on in formulating his opinions. Dr. Perez' report was supported with clear reference to the data and peer-reviewed literature he relied on. He directly and without equivocation answered all questions posed in his deposition. The Court has no basis to find that the methodology underlying Dr. Perez' conclusions and opinions is not scientifically valid, or that he failed to properly apply his described methodology to the data that he found important to the issues concerning Cathy's lung cancer.

Instead of impeaching Dr. Perez' methodology, the defendant primarily questions the data that Dr. Perez relied on for his opinions. The defendant argues that Dr. Perez never worked in a railyard, and did not have first-hand knowledge of what a hostler did, or of the Alliance railyard. Further, the

defendant implies that Dr. Perez did not have first-hand knowledge of Cathy's specific exposures to diesel exhaust. Filing 84 at 6-7. But, Dr. Perez' knowledge regarding the defendant's worksite, and Cathy's specific exposures came from her husband, the plaintiff, who worked the same job at the same location as Cathy for eight years. The defendant's argument in this regard is without merit.

The Court finds that Dr. Perez' testimony is admissible under Rule 702 and *Daubert*. The defendant does not substantively challenge Dr. Perez' scientific methodology, but challenges the application of that methodology. The defendant's criticisms go to the weight of Dr. Perez's testimony, not its admissibility. Dr. Perez interviewed, and read the deposition testimony of, Cathy's husband, the plaintiff, who had first-hand knowledge of Cathy's exposure to diesel exhaust and the defendant's workplace. Dr. Perez relied on peer-reviewed studies and literature, as well as authoritative government publications, in forming his opinions and conclusions. Based on this data, Dr. Perez was able to estimate, to a reasonable degree of certainty, Cathy's lifetime exposure to diesel exhaust, and correlate her exposure to an increased risk of developing lung cancer. To prove exposure levels, a plaintiff need only make a threshold showing that he or she was exposed to toxic levels known to cause the type of injury suffered. *Mattis v. Carlon Elec. Products*, 295 F.3d 856, 860-61 (8th Cir. 2002).

Expert testimony should be admitted if it advances the jury's understanding of the facts that must be determined. *Robinson v. GEICO Gen. Ins. Co.,* 447 F.3d 1096, 1100 (8th Cir. 2006). The defendant's remedy is vigorous cross-examination and the presentation of its own evidence, expert or otherwise, to counter the weight of Dr. Perez' opinions. *See*, *Daubert*, 509 U.S.

at 596. The defendant's remedy is not exclusion of Dr. Perez' opinions by this Court.

Dr. Perez' methodology was reasonable in light of his expertise in the fields of industrial and environmental hygiene. Dr. Perez has the qualifications and expertise to express opinions regarding foreseeability and notice with respect to Cathy's injury and the defendant's negligence.

2. DR. CHIODO'S OPINIONS

Proof of causation in a toxic tort case requires evidence showing general causation—that the identified toxin has the capacity to cause the injury suffered by the plaintiff in persons subject to the same exposure level as the plaintiff—and specific causation—that the toxin was a cause of the plaintiff's injury. *Mattis*, 295 F.3d at 860. Here, the defendant criticizes Dr. Chiodo's opinion on general causation because he reached his conclusion before researching relevant peer-reviewed literature. The defendant also criticizes Dr. Chiodo for not utilizing the Bradford Hill criteria to arrive at his opinion on general causation. Filing 87 at 7-8. Regarding Dr. Chiodo's specific causation opinion, the defendant asserts that Dr. Chiodo did not properly perform a differential diagnosis, and did not provide a dosage level regarding Cathy's diesel exhaust exposure. Filing 87 at 9, 14. The Court finds the defendant's arguments to be without support in the record.

Dr. Chiodo's report certainly lacks detail, but sufficiently discloses and supports his opinions on general and specific causation. Filing 100-3. Dr. Chiodo reports reviewing Cathy's medical records from several providers, Cathy's medical billing records, the plaintiff's deposition transcript, and Dr. Perez' report. Filing 100-3 at 2-3. Dr. Chiodo also interviewed the plaintiff. His report identifies several articles from peer-reviewed scientific and medical

publication and other texts, primarily in support of his opinion on general causation. Filing 100-3 at 3-9.

Dr. Chiodo's opined that Cathy's exposure to diesel exhaust during the course of her employment with the railroad was a significant contributing factor in her development of adenocarcinoma of the lung. Filing 100-3 at 9. He concluded that Cathy had "long and intense exposures to the known lung carcinogen, diesel exhaust, during the course of her employment for the railroad." *Id.* Dr. Chiodo reported that diesel exhaust is known to be a lung carcinogen, and that railroad work is known to cause an increased risk of adenocarcinoma of the lung. In terms of exposure, Dr. Chiodo testified that he relied on Dr. Perez' report (filing 100-2 at 15), which identified an increased risk of developing lung cancer from exposure to diesel exhaust at various exposure levels that Dr. Perez concluded were consistent with Cathy's employment with the defendant (filing 97-3 at 6-7).

In his deposition, Dr. Chiodo was asked what he did in this case to determine whether diesel exhaust caused lung cancer generally. Filing 100-2 at 21. He answered:

> Well, I knew that already as part of my knowledge, training, and experience. So I didn't have to determine it. It's like asking me what—how do I know that a blocked coronary artery causes a mild cardio infarction. Well, I know that. How do I know that? I'm a doctor. I have training.

Filing 100-2 at 21.

Dr. Chiodo agreed that he first arrived at his opinion that diesel exhaust causes lung cancer, and then looked for literature that corroborated his

opinion. He explained that the literature search wasn't done to educate himself, but was done to corroborate what he already knew for the purposes of litigation. *Id.* As this line of questioning continued, Dr. Chiodo, citing his Masters of Science from Oxford in Evidence-Based Healthcare, said, "I already knew that evidence-based medicine supports the assertion that diesel exhaust causes lung cancer. So there's no need to do a systematic review of the literature." Filing 100-2 at 22.

The defendant argues that Dr. Chiodo's general causation opinion is not admissible because it rests "solely on the assertion that Decedent was exposed to diesel and that she died of adenocarcinoma," and his review of information that generated his opinion was limited. Filing 87 at 6-7. The defendant also faults Dr. Chiodo for reaching his conclusion first, and then finding corroboration for his already formed opinion in peer-reviewed literature. Filing 87 at 7.

There would be good reason to preclude testimony from an expert who formed his or her opinions before reading the relevant literature, if that expert was not sufficiently familiar with the field to diagnose the cause of a plaintiff's condition without first reviewing that literature. *See Claar,* 29 F.3d at 502. But here, the defendant does not claim that Dr. Chiodo is insufficiently familiar with the disease of adenocarcinoma, and its potential causes, to form an opinion without first reviewing the relevant literature. Instead, the defendant claims that Rule 702 requires that literature must be reviewed before opining on general causation, notwithstanding, as the defendant acknowledges, "Dr. Chiodo's extensive education, personal knowledge, experience and qualifications." Filing 87 at 6.

The Court disagrees. There is no single requirement for admissibility as long as the proffer indicates that the expert's testimony and evidence is reliable

and relevant. *Klingenberg v. Vulcan Ladder USA, LLC,* 936 F.3d 824, 829 (8th Cir. 2018). The objective of *Daubert* "is to make certain that an expert, whether basing testimony upon professional studies or personal experiences, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho Tire*, 526 U.S. at 152. The defendant does not criticize the intellectual rigor of Dr. Chiodo's general causation opinion, only the manner in which it was expressed. Further, the defendant does not assert or argue that the literature Dr. Chiodo claimed corroborated his opinions on causation, actually fails to corroborate his causation opinions. *See Mitchell v. Gencorp Inc.,* 165 F.3d 778, 780 (10th Cir. 1999) (experts excluded where no article the physician experts produced showed a causal link between the toxin and the injury).

Neither does the Court find the defendant's Bradford Hill criteria argument meritorious. The Bradford Hill criteria is an epidemiological study approach employed to assess when an association can truly be deemed causal. *In re Lipitor (Atorvastatin Calcium) Marketing, Sales Practices and Products Liability Litigation*, 892 F.3d 624, 638 (4th Cir. 2018); *In re Neurontin Marketing, Sales Practices, and Products Liability Litigation*, 612 F. Supp. 2d 116, 132-33 (D. Mass. 2009). Dr. Chiodo's opinion does not rest on what he subjectively believes is an association between diesel exhaust, railroad employment, and adenocarcinoma of the lung. It rests on his education, personal knowledge, experience and qualifications as a licensed physician, as well as on the several peer-reviewed articles he cited in his report as corroborative of his opinion. Although the Bradford Hill criteria may be useful in establishing causation, it is by no means required as a prerequisite for a general causation opinion, and the failure to utilize Bradford Hill does not preclude admission of an expert's testimony and evidence pursuant to *Daubert*.

In re Celexa and Lexapro Products Litigation, 927 F. Supp. 2d 758, 766 (E.D. Mo. 2013).

"Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596. It is not the province of this Court to weigh or assess the correctness of Dr. Chiodo's opinions. *Johnson*, 754 F.3d at 562. That is the function of the jury. *See Kumho Tire Co.*, 526 U.S. at 153.

Regarding specific causation, the defendant argues that Dr. Chiodo did not properly perform a differential diagnosis. A reliable differential diagnosis provides a valid foundation for admitting expert testimony regarding medical causation. *Turner v. Iowa Fire Equipment Co.*, 229 F.3d 1202, 1208 (8th Cir. 2000); *Bland v. Verizon Wireless, (VAW) LLC,* 538 F.3d 893, 897 (8th Cir. 2008). A properly performed differential etiology first rules in plausible causes, and then systematically rules out causes that are less plausible until the most plausible cause or causes remain. *Kirk v. Schaeffler Group USA, Inc.*, 887 F.3d 376, 392 (8th Cir. 2018).

Dr. Chiodo was asked to identify the known causes of adenocarcinoma of the lung. He identified (1) smoking cigarettes, (2) exposure to diesel exhaust, (3) exposure to radon or radiation, and (4) genetic predisposition. Filing 100-2 at 13. Dr. Chiodo ruled in cigarette smoking based on Cathy's history that she was born in 1952, and started smoking when she was seventeen years old. Dr. Chiodo was not aware of any gaps or breaks in her smoking, and, accordingly, could rule in, but not rule out, cigarette smoking as a possible cause of Cathy's lung cancer. Filing 100-2 at 14. Dr. Chiodo ruled in Cathy's exposure to diesel exhaust based on the number of years she worked as a hostler for the railroad, and based on Dr. Perez' opinions on Cathy's estimated exposure level. Filing

100-2 at 15, 23-24. Dr. Chiodo ruled out exposure to radon and a genetic predisposition, finding each to be less plausible causes of Cathy's lung cancer. He was not aware of any record or report indicating that Cathy had been exposed to radon, or that her cancer was idiopathic, based on a genetic predisposition. Filing 100-2 at 30-31.

Similar to its criticism regarding general causation, the defendant argues that Dr. Chiodo failed to use any methodology to assess the cause of Cathy's adenocarcinoma. Filing 87 at 12. But again, Dr. Chiodo's differential diagnosis does not rest on what he subjectively believes are associations with respect to adenocarcinoma of the lung. It rests on his education, personal knowledge, experience and qualifications. As a medical professional, Dr. Chiodo personally possesses a fund of medical knowledge, experience, and expertise. A "methodology" would not be necessary to tap his fund of medical knowledge. *See, Kumho Tire,* 526 U.S. at 150. For example, what "methodology" would Dr. Chiodo use to link cigarette smoking to lung cancer? Cigarette smoking, radon exposure, and a genetic predisposition are not merely factors observed as being associated with lung cancer. Each is widely known, and well-established, as potential causes of lung cancer.

To the extent that the defendant argues Dr. Chiodo did not sufficiently investigate Cathy's possible radon exposure or genetic predisposition, a differential diagnosis expert opinion can be reliable with less than full information. *Johnson v. Mead Johnson & Co., LLC,* 754 F.3d 557, 564 (8th Cir. 2014). Further, experts are not required to rule out all possible causes when performing a differential diagnosis analysis. *Id.* at 563; *Kirk*, 887 F.3d at 392. These considerations all go to the weight to be given to the testimony by the factfinder, not the admissibility of the expert's testimony. *Id.* It cannot be said enough—cross-examination and the presentation of contrary evidence are the

tools used in the adversarial process to counter the weight of an opponent's expert testimony, not exclusion by the Court. *Daubert*, 509 U.S. at 590.

Finally, the defendant asserts that Dr. Chiodo failed to proffer an estimate of Cathy's level of exposure with respect to his specific causation opinion. Filing 87 at 14. The defendant is correct, but its assertion is not particularly relevant. Dr. Chiodo testified that he relied on Dr. Perez' report for data on Cathy's diesel exhaust exposure. Filing 100-2 at 15. Dr. Perez concluded that Cathy's average exposure levels would fall somewhere between 18 and 25 µg/m3, and he would expect her exposure concentrations to be above 25 µg/m3 while she was in a locomotive cab. Filing 97-2 at 15. Dr. Perez also reported that excess risks of lung cancer due to lifetime occupational exposures to elemental carbon of 25 µg/m3 is estimated at 689 per 10,000 workers, and the excess risk for lifetime occupational exposures of 10 µg/m3 is estimated at 200 per 10,000 workers. Both exposure risks exceed the OSHA and NIOSH goals of limiting excess risks of cancer associated with lifetime exposure to a carcinogen.

"An expert may base an opinion on facts in the case that the expert has been made aware of or personally observed." Fed. R. Evid. 703. Dr. Chiodo was not required to identify a mathematically precise dosage of Cathy's exposure to diesel exhaust, but only evidence which a reasonable person could use to conclude that Cathy's exposure to diesel exhaust during the course of her employment with the defendant was, more likely than not, a cause, no matter how slight, of her adenocarcinoma of the lung. *See Bednar v. Bassett Furniture Mfg. Co., Inc.*, 147 F.3d 737 (8th Cir. 1998).[1]

[1] The Court is aware that Dr. Chiodo's specific causation opinion was found to be inadmissible in two recent cases in this district. *See West v. Union Pac. R.R. Co.*, No. 8:17-CV-036, 2020

Daubert calls for the liberal admission of expert testimony. *Johnson,* 754 F.3d at 562. Doubts regarding the usefulness of expert testimony are resolved in favor of admissibility. *United States v. Finch*, 630 F.3d 1057, 1062 (8th Cir. 2011). Exclusion of an expert's opinion should occur only if it is so fundamentally unsupported that it can offer no assistance to a jury. *Hose v. Chicago Northwestern Transp. Co.,* 70 F.3d 968, 974 (8th Cir. 1995). The Court concludes that the experts' opinions here rest on solid grounds, "based on what is known" and must be admitted. *Daubert*, 509 U.S. at 590. The experts' opinions are to be challenged in the adversarial process—with vigorous cross-examination and the testimony of competing experts—not with exclusion by the Court. *Id.*

The Court finds that the plaintiff's experts' methodology is scientifically valid, and can be applied to the facts of this case. The methodology used, and opinions expressed, are sufficiently reliable to assist a jury in resolving questions of fact. The defendant's motion to exclude the plaintiff's experts will be denied. Since the plaintiff's experts' testimony will be admitted, there are several issues of fact for a jury to determine, as noted throughout this opinion. Accordingly, the defendant's motion for summary judgment will also be denied.

IT IS ORDERED:

1. The defendant's motion in limine to exclude Dr. Perez' testimony (filing 83) is denied.

WL 531994, *5-6 (D. Neb. Feb. 3, 2020); *Harder v. Union Pac. R.R. Co.*, No. 8:18-CV-058, 2020 WL 469880, *5-6 (D. Neb. Jan. 29, 2020). In those cases, unlike here, Dr. Chiodo was unaware of the specific details of the plaintiff's exposure to the toxin, and he was also not aware of Dr. Perez' reports in those cases regarding each plaintiff's specific exposure.

2. The defendant's motion in limine to exclude Dr. Chiodo's testimony (filing 86) is denied.

3. The defendant's motion for summary judgment (filing 91) is denied.

Dated this 29th day of June 2020.

BY THE COURT:

John M. Gerrard
Chief United States District Judge